United States Government **Department of Energy**

memorandum

DATE: July 11, 1996

REPLY TO ATTN OF: EH-53 (R. Sastry, 301-903-4664)

SUBJECT: Chemical Safety Concerns / Search of Occurrence Reporting and Processing System (ORPS)

TO: Distribution

Significant Occurrences

June, 1996

Class 1:

None

Class 2:

None

Although there were no Class 1 or 2 occurrences this month. Three significant "precursor" occurrences (Class 3) are worth noting:

Class 3:

INEL - fire in laboratory hood while heating epoxied waste form

Oak Ridge - compressed gas cylinder dropped down stairs and damaged

Savannah River - personnel exposure to hazardous chemical originally thought to be in excess of TLV

Additional:

At Livermore, an explosive crystal was found during precipitation. At Los Alamos, there were two instances of employees violating entry requirements for explosive exclusion areas. At the Kansas City Plant, gasoline vapors caused evacuation of a production area.

These occurrences are further described below with additional information, including Occurrence Report (OR) numbers, provided in Table 1.

A search of ORPS for occurrences having chemical safety relevance conducted for the month of June 1996 produced 27 reports representing potential chemical safety concerns. These occurrences are listed in Table 1. Three occurrences were categorized as "Unusual" with the remainder identified as "Off-normal." One occurrence was "Cancelled." The Office of Defense Programs (DP) was Cognizant

Secretarial Office (CSO) for 12 occurrences, Environmental Management (EM) reported 11, Energy Research (ER) had three, and Fossil Energy (FE) one. This CSO designation may change after the distribution of this monthly memorandum, and this change will be reflected in Quarterly and Annual Reviews.

In order to determine which chemical safety occurrences represent more important (significant) Levels of Concern, a classification scheme has been developed. The definitions of these Classes are as follows:

Class 1	Occurrences characterized by an injury or exposure requiring hospital treatment, or confirmed, severe environmental effect; also occurrences that had the potential to cause these effects with all safety barriers down, except, for example, that no one was nearby to be injured or exposed, or escaped in time, or the climatic conditions were favorable;
Class 2	Occurrences characterized by minor injury (first aid) or exposure, or minor environmental damage; also occurrences that were near misses (where one additional safety barrier remained to prevent consequences) to those in Class 1;
Class 3	Potential precursors to the occurrences in Class 1 or 2;
Class 4	Minor occurrences such as leaks, spills, or releases, which may be significant in their frequency of occurrence though not in their consequences.

There were no Class 1 or Class 2 occurrences reported during June. There were 11 Class 3 occurrences. Among the Class 3 occurrences, in addition to those noted previously, were two failures of process exhaust fans at LANL due to low electrical voltage. There was an OSR violation at Rocky Flats involving a failure to complete LCO surveillances of oxygen analyzers and exhaust fans. There was a USQ screening at Hanford concerning low hydroxide concentration in a waste tank.

Summaries of Selected Class 3 Occurrences:

Fire in Laboratory Hood while Heating Waste Form (EM) (ID--LITC-TRA-1996-0006) On June 5, at INEL, there was a fire in a fume hood. As part of a treatability study, additional treatments were being conducted on a waste form that failed the Toxicity Characteristic Leaching Procedure for lead. These additional treatments involved pretreatment of a cured epoxy waste form that had been crushed and was immersed in an aqueous solution in a beaker. The beaker was in a fume hood on a hot plate set on a low setting in order to dry the solution so that the waste form could be epoxied and reevaluated by TCLP. The scientist working in the hood noticed that the contents of the beaker had begun to smoke and that a small flame could be observed. The waste form being treated was originally a barium sulfate aqueous waste that contained low levels of radioactivity and inorganics (lead at < 1.0 grams/liter, mercury at < 0.077 g/L, and chromium at 0.154 g/L). The facility was evacuated and the fire department and the incident response team responded. Hoods in the affected area were taken out of service until HEPA filters could be DOP tested and the ventilation system evaluated. A critique was held. Prior to continuation of the waste treatment on epoxied waste forms, evaluation is required to determine the cause of the fire and to aid in developing drying techniques which do not require heat. No environmental release occurred.

Employee Injured when Compressed Gas Cylinder Dropped/Damaged (ER): (ORO--ORNL-X10PLEQUIP-1996-0009) On June 18, at Oak Ridge, a pneumatic test required a source of compressed nitrogen. The supervisor and employees decided that a cylinder would be transported down a stairwell. The employees initially moved the cylinder using a cylinder cart, but at the top of the stairwell they lowered the cylinder onto its side and began to slide the cylinder down the steps. The employees lost control of the cylinder and it struck one employee injuring him. The employees immediately called the

supervisor for assistance, and he determined that during the fall, the protective cap over the cylinder valve was knocked off and the valve stem was sheared off at the top of the packing nut. Closer inspection indicated that there was possible damage to the nipple which connected the valve to the cylinder. The damaged cylinder was successfully recovered without incident. The injured employee was treated for minor back pain and abrasions.

Original Determination of Employee Exposure to Methylene Chloride (EM): (SR--WSRC-LTA-1996-0013) On June 4, at Savannah River, information was received that an employee had been exposed to methylene chloride at levels of 220 ppm. The ACGIH TLV is 50 ppm. On May 13, a maintenance mechanic was gluing lexan sheets with a substance containing methylene chloride. During the work, the mechanic wore a passive monitoring device on his collar which was sent to an outside lab for analysis. Subsequently, on June 13, a follow-up report on the results of the initial analysis of the monitoring device worn by the mechanic was received from the off-site laboratory indicating the exposure was NOT in excess of the TLV. The corrected exposure is 7 ppm time-weighted average exposure. This occurrence report has been cancelled.

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Additional information regarding these occurrences and others will be discussed in an upcoming Quarterly Review. As occurrence reports are finalized, lessons learned will be communicated.

[Signature of]

Rama Sastry
Office of Field Support

Attachment

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